

REMARKS/ARGUMENTS

This is a Response to the Office Action mailed August 8, 2005, in which a three (3) month Shortened Statutory Period for Response was set, expiring on November 8, 2005. Enclosed is our check to cover the fee for a two-month extension of time, to January 8, 2006, which falls on a Sunday and therefore is timely filed on January 9, 2006. Twenty-three (23) claims, including two (2) independent claims, were paid for in the application. Claims 4, 7, 12, and 14 are currently amended. No new claims have been added. No new matter has been added to the application. The Director is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090. Claims 1-23 remain pending.

1. Acknowledgement of Allowable Subject Matter

Applicants acknowledge the Examiner's conclusion that the subject matter of claims 4-9, 12-15, and 17 is allowable, as noted in paragraph 4 of the Office Action. Accordingly, Applicants have amended claims 4, 7, 12, and 14 into independent claim format to include all the limitations of their respective base claim and any intervening claims.

Applicants wish to clarify that the amendments to claims 4, 7, 12, and 14 are made for purposes of placing the claims in condition for allowance, and not in response to any rejections made based on cited art. Because a dependent claim as a matter of law inherently contains all of the limitations of its respective independent claim, and any intervening claims, the amendments to claims 4, 7, 12, and 14 do not additionally narrow the scope of claims 4, 7, 12, and 14 in any manner. The amendments to claims 4, 7, 12, and 14, now in independent claim format, merely add the text of limitations inherently included in claims 4, 7, 12, and 14 as originally filed. Indeed, Applicants submit that no substantive limitations have been added to the amended claims 4, 7, 12, and 14. Therefore, no prosecution history estoppel should arise from these amendments.

However, Applicants have not amended claims 5-6, 8-9, 13, 15, and 17 in this response because the Applicants believe, for the reasons detailed below, that the parent claims from which claims 5-6, 8-9, 13, 15, and 17 depend are allowable over the cited art.

2. Rejections Under 35 U.S.C. § 102(b)

In the Office Action, at paragraph 3, claims 1-3, 10-11, 16, and 18-23 stand rejected under 35 U.S.C. §102(b) as allegedly anticipated by *Zheng et al.* (U.S. Patent 5,418,862), hereinafter *Zheng*. For a proper rejection of a claim under 35 U.S.C. Section 102, the cited reference must disclose all elements/features/steps of the claim. See, e.g., *E.I. du Pont de Nemours & Co. v. Phillips Petroleum Co.*, 849 F.2d 1430, 7 USPQ2d 1129 (Fed. Cir. 1988).

a. Independent Claims 1 and 10

The Office Action, at page 4, paragraph 6, alleges that, “as seen in figure 5 of the *Zheng* invention, the resolution is changed in about a 45 degree angle with respect to the code (col. 3, lines 55-58). The 45 degree angle thusly encompasses the resolution being changed not only in a direction parallel to the scan direction, but also perpendicular to the scan direction.” Applicants respectfully traverse, and respectfully disagree with the Office Action’s interpretation of *Zheng* for at least the following reasons.

Zheng Figure 5, and the attendant discussion, does not disclose, teach, or suggest at least the feature of “a scanning control circuit coupled to selectively sample the respective signals from the light sensing elements of the sensor array and operable to *change a resolution of the sensor array in a direction perpendicular to a scanning direction*, between at least a first resolution during at least a first sampling pass and a second resolution during at least a second sampling pass, the second sampling pass following the first sampling pass” (emphasis added). Similarly, *Zheng* Figure 5 does not disclose, teach, or suggest at least the feature of “receiving signals from a second set of light sensing elements at a second resolution during a second sampling pass across the sensor array while the image of the first machine-readable symbol is formed on the sensor array, the *second resolution different from the first resolution in a direction perpendicular to the first and second sampling passes*” (emphasis added). For the convenience of the Examiner, the relevant discussion of *Zheng* Figure 5 is provided below (col. 12, lines 2-23).

Referring now to FIG. 5, there is shown a graphical representation of sub-image 500 of pixel image 200 of FIG. 2. Each square in FIG. 5 represents

a pixel (i,j) in pixel image 500 identified by column index i and row index j, where i and j run from 0 to 15. Pixel row 6 in FIG. 5 corresponds to scan line 270 of FIG. 2, and pixel (13,6) corresponds to point 224 of FIG. 2. Pixels not lying on the outside edges of pixel image 200 have eight neighbors. For example, the neighbors of pixel (13,6) are pixels (13,5), (14,5), (14,6), (14,7), (13,7), (12,7), (12,6), and (12,5). Pixels in FIG. 5 have a black dot if their gray-scale intensity level is less than or equal to the first threshold. Similarly, pixels in FIG. 5 have no black dots if their intensity level is greater than the first threshold. As described earlier in this specification in conjunction with FIG. 1, the first threshold may be determined from the histogram of the pixel image generated by means 102 of detection system 100. Pixels shown with a black dot may form part of a bar in bar code symbol 202. Pixels shown without a black dot may form part of spaces in bar code symbol 202.

The discussion above regarding *Zheng* Figure 5 makes no mention whatsoever of changing scanning resolution, but rather, simply describes the nature of the *Zheng* pixels of the sub-image 500. Accordingly, Figure 5 does not disclose, teach, or suggest at least the above recited features of claims 1 or 10.

Furthermore, the 45 degree angle of the orientation of the *Zheng* bar code symbol 202 illustrated in Figure 2 (and the portion thereof illustrated in the sub-image 500 of Figure 5) is not related to changing scanning resolution. *Zheng* discloses that "Figure 2 is a graphical representation of a pixel image containing a bar code symbol oriented at a 45-degree angle with respect to the rows and columns of pixels in the pixel image" (col. 1, lines 58-61). For the convenience of the Examiner, the relevant discussion of *Zheng* Figure 2 is provided below (col. 3, line 35 to col. 4, line 11).

Referring now to FIG. 2, there is shown a graphical representation of pixel image 200 containing bar code symbol 202 oriented at a 45-degree angle with respect to the rows and columns of pixels in pixel image 200. According to a preferred bi-directional binary search sequence of the present invention, a first scan line 264 divides pixel image 200 in half horizontally. A second scan line 210 divides pixel image 200 in half vertically. Third and fourth scan lines 270 and 258 divide the top and bottom halves of pixel image 200 in half again, respectively. Similarly, fifth and sixth scan lines 204 and 216 divide the left and right halves of pixel image 200 in half again, respectively. Thus, scan lines are preferably either parallel or perpendicular to one another.

The selection of subsequent scan lines is preferably made by continually dividing in half the remaining sections of pixel image 200. Depending

on the operational requirements imposed on detection system 100, the scanning of pixel image 200 may continue until a specified minimum section size is reached, until each and every pixel row and column is scanned, or until the allowed processing time has expired. In a preferred embodiment, scanning of pixel image 200 ensures that each bar code symbol quiet zone is scanned at least two times.

Zheng is limited to disclosing how scan lines 264, 270, 258, 204, and 216 are used to divide the pixel image 200, and how subsequent scan lines may be selected to further divide up the remaining sections of the pixel image 200. The 45-degree angle orientation of the bar code symbol 202 has no bearing whatsoever on changing scanning resolution because the 45-degree angle of the image is unrelated to the scanning direction(s) of the imaging device, *i.e.*, scanning is performed on a single row of pixels in the disclosed horizontal scan direction or single column of pixels in the disclosed vertical scan direction, regardless of how the image of the target is oriented with respect to the sensor array.

Summarizing, *Zheng* Figures 2 and 5, and the attendant discussion of Figures 2 and 5, do not support the allegation of the Office Action that “the resolution is changed in about a 45 degree angle with respect to the code.” Accordingly, for at least this reason alone, the rejection should be withdrawn.

b. Further Arguments for Allowability of Claims 1 and 10

Zheng is limited to disclosing a change in resolution during the scanning of a single scan line. In *Zheng*, scans performed are along a single scan line. *Zheng* discloses that “all vertical quiet-zone scans follow the same quiet-zone scan direction, either top to bottom or bottom to top, and, similarly, all horizontal quiet-zone scans follow the same quiet-zone scan direction, either left to right or right to left” (col. 5, lines 6-10). “Identification subsystem 110 searches along the selected scan line at high resolution to identify a start/stop character. Thus, the search direction and the selected scan line are collinear” (col. 5, lines 48-51, emphasis added).

Zheng expressly defines the terms “high resolution scanning” and “low resolution scanning.” *Zheng* discloses that “means 106 scans the selected scan line in a quiet-zone scan direction for a potential bar code symbol quiet zone. Scanning for quiet zones is preferably performed at **low resolution**, where the intensity level of *only every second or third pixel in the*

selected scan line is analyzed" (col. 4, lines 28-35, emphasis added). *Zheng* further discloses that "searching at **high resolution** involves *analyzing the intensity of every pixel* along a portion of the selected scan line" (col. 5, lines 57-59, emphasis added). No other type of scanning resolution is defined in *Zheng*. Accordingly, *Zheng* is limited to disclosing resolution changes made along portions of a single scan line.

In contrast to the disclosure of *Zheng*, claim 1 recites the feature of a scanning control circuit that is "operable to change a resolution of the sensor array in a direction perpendicular to a scanning direction, between at least a first resolution during at least a first sampling pass and a second resolution during at least a second sampling pass, the second sampling pass following the first sampling pass." Similarly, claim 10 recites the feature of "the second resolution different from the first resolution in a direction perpendicular to the first and second sampling passes." That is, claims 1 and 10 recite changing resolution in a direction perpendicular to the scanning direction. This is different from the *Zheng* resolution changes made along a single scan line. Accordingly, for at least this reason alone, *Zheng* does not anticipate claims 1 or 10, and the rejection should be withdrawn.

Furthermore, *Zheng* is limited to disclosing that the change from low resolution scanning to high resolution scanning, or from high resolution scanning to low resolution scanning, is performed along a single scan line. In contrast to the disclosure of *Zheng*, claims 1 and 10 recite changing resolution between a first sampling pass and a second sampling pass.

Zheng discloses, for example, that "means 106 may perform a low-resolution quiet-zone scan from left to right (the quiet-zone scan direction) along scan line 264 starting from point 262. At point 266, means 106 may detect a state transition from a sequence of bright pixels to at least one dark pixel indicating a potential quiet zone. Means 108 then determines that the potential quiet zone is not inside a pixel image region containing a bar code symbol previously detected and decoded. Start/stop character identification subsystem 110 searches along scan line 264 in the quiet-zone scan direction at high resolution for a reference start/stop character contained in the reference table" (col. 6, lines 55-68). As another example of a scanning resolution change, *Zheng* discloses that "means 106 may detect another state transition from a dark pixel to sequence of bright pixels at point 232 indicating another potential quiet zone.

Means 108 again determines that this potential quiet zone is not inside a region of pixel image 200 containing a previously decoded bar code symbol. Since the detected state transition is from dark to bright, subsystem 110 searches for a start/stop character at high resolution along scan line 264 from right to left, that is, in the direction opposite that of the quiet-zone scan direction. Once again, subsystem 110 fails to identify a reference start/stop character, means 118 determines that scan line 264 is not complete, and means 106 resumes the low-resolution quiet-zone scan along scan line 264 from point 232 in the quiet-zone scan direction from left to right" (col. 7, lines 9-23).

In the examples of *Zheng* described above, all scanning, and the attendant changes in scanning resolution, are performed only "along scan line 264" and only during a scan of that scan line. In contrast, claims 1 and 10 recite changing resolution between a first sampling pass and a second sampling pass. Accordingly, *Zheng* does not disclose, teach, or suggest at least the feature of a scanning control circuit that is "operable to change a resolution of the sensor array in a direction perpendicular to a scanning direction, between at least a first resolution during at least a first sampling pass and a second resolution during at least a second sampling pass, the second sampling pass following the first sampling pass" as recited in claim 1, or the feature of "the second resolution different from the first resolution in a direction perpendicular to the first and second sampling passes" as recited in claim 10. Therefore, for at least this reason alone, *Zheng* does not anticipate claims 1 or 10, and the rejection should be withdrawn.

c. Claims 2-3, 11, 16 and 18-23

Because independent claim 1 is allowable over the cited art of record, dependent claims 2-3 (which depend from independent claim 1) are allowable as a matter of law for at least the reason that the dependent claims 2-3 contain all features/elements of independent claim 1. See, e.g., *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). Similarly, because independent claim 10 is allowable over the cited art of record, dependent claims 11, 16, and 18-23 (which depend from independent claim 10) are allowable as a matter of law for at least the reason that the dependent claims 11, 16, and 18-23 contain all features/elements of independent claim 10. Accordingly, the rejection to these claims should be withdrawn.

3. Conclusion

Applicants thank the Examiner for indicating the allowable subject matter of claims 4-9, 12-15, and 17. In light of the above remarks, Applicants respectfully submit that all objections and/or rejections have been traversed, rendered moot, and/or accommodated, and that all pending claims 1-23 are allowable. Applicants, therefore, respectfully request that the Examiner reconsider this application and allow all pending claims. The Examiner is encouraged to contact Mr. Armentrout by telephone to discuss the above and any other distinctions between the claims and the applied references, if desired. If the Examiner notes any informalities in the claims, the Examiner is further encouraged to contact Mr. Armentrout by telephone to expediently correct such informalities.

Respectfully submitted,

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